

# REPRESENTATION THEORY OF ORTHOGONAL MATROIDS

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Orthogonal matroids generalize maximal isotropic spaces just as matroids generalize linear spaces, and they are Coxeter matroids of type  $D_n$  in the sense of Borovik–Gelfand–White, and even  $\Delta$ -matroids or tight 2-matroids in the sense of Bouchet. In this talk, we construct the foundation  $F_M$  of an orthogonal matroid  $M$ , which processes the universal property that the set of equivalence classes of representations of  $M$  over a field  $F$  is naturally in one-to-one correspondence with  $\text{Hom}(F_M, F)$ . We give different explicit presentations of the foundation  $F_M$  as an algebra over the regular partial field for every orthogonal matroid  $M$ . The talk will end with some interesting examples of the foundations and open problems.